



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,046	01/22/2002	Teruo Wakashiro	020067	1714

23850 7590 07/07/2003

ARMSTRONG, WESTERMAN & HATTORI, LLP
1725 K STREET, NW
SUITE 1000
WASHINGTON, DC 20006

EXAMINER

SWENSON, BRIAN L

ART UNIT	PAPER NUMBER
----------	--------------

3618

DATE MAILED: 07/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/051,046

Applicant(s)

WAKASHIRO ET AL.

Examiner

Brian Swenson

Art Unit

3618

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 1 and 2 are objected to because of the following informalities:

In line 3 of claim 1 the phrase, "the motor regenerates regenerative power" is unclear and suggest the motor has previously generated regenerative power. The examiner suggest –the motor generates regenerative power–.

In line 2 of claim 2 the phrase "a cylinder deactivated operation detecting devices" is unclear. The examiner suggests removing the word "a" or changing "devices" to –device–.

Appropriate correction is required.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1 and 3 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 4 of copending Application No. 10/046,293. Although the conflicting claims are not identical,

Art Unit: 3618

they are not patentably distinct from each other because the copending Application contains all the claimed limitations except for stopping fuel during deceleration when the cylinders are deactivated, it is obvious to one having ordinary skill in the art that fuel is stopped when the cylinders are deactivate to prevent excessive exhaust emissions.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,487,998 issued to Masberg et al.

Masberg et al. teach in Figures 1-6 and respective portions of the specification of a control apparatus for a hybrid vehicle comprising a driving power source composed of an engine (1) and a motor (4), and the motor generates regenerative power during deceleration depending on the deceleration state (see at least Col. 7, lines 44+), wherein

the engine is a type of engine capable of executing cylinders deactivated operation for at least one cylinder (see at least Col. 20, lines 64+); and the control apparatus comprises;

a cylinder deactivated operation determination device for determining whether it is appropriate for said engine to enter a cylinders deactivated operation depending on the driving conditions of the vehicle (see at least Figure 5 and Col. 20, lines 64-68 and Col. 21, lines 1+),

a cylinder deactivated operation execution device (the reference teaches of using valve shutoff as a means for shutting off the cylinders, Col. 3, 32-34) for executing the all cylinders deactivated operation of said engine when the all cylinders deactivated operation is determined by said cylinder deactivated operation determination device.

Masberg et al. teach that the motor (4) is used as a generator to brake the vehicle (Col. 7, lines 49-51), but Masberg et al. is silent if the fuel supply to the engine is stopped when the vehicle is decelerated or braked. It would have been obvious to one having ordinary skill in the art at the time the invention was made to shut off the fuel supplied to the engine and deactivate the cylinders during deceleration base on Masberg et al.'s teaching that the objective of shutting off the cylinders is to over come the prior art's internal engine's inefficiencies at low rotary speeds (Col. 1, lines 13-33) that the engine would be subject to during braking and fuel is stopped during shut off of the cylinders (Col. 21, lines 1-7).

In regards to claim 3, Masberg et al. is silent if the cylinder deactivated operation execution device closes both the intake valves and exhaust valves of the cylinders. It would have been obvious to one having ordinary skill in the art at the time the invention was made to shut both the intake and exhaust valves of the cylinders. One would be motivated to close both the intake and exhaust valves of the cylinders based on

Masberg et al.'s disclosure that cylinders are switched off by valve shutoff (Col. 2, lines 10-15) and shutting off cylinders contributes to lessening of the release of harmful exhaust gases (Col. 1, lines 30-34). Shutting off both the intake and exhaust valves would lessen the release of the exhaust gases.

In regards to claim 5, Masberg et al. is silent if cylinders deactivated operation includes all cylinders deactivated operation. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include an all cylinder off deactivated. One would be motivated to deactivate all cylinders when the motor operates as a brake during regenerative braking as taught by Masberg et al. (Col. 7, lines 49-51). When the motor is operated as a brake the engine is not used to propel the vehicle. Shutting all the cylinders would be in accord with Masberg's objective of reducing exhaust emissions.

5. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masberg et al. in view of U.S. Patent No. 6,360,728 issued to Sturman.

Masberg et al. disclose the claimed invention, in reference to claims 1 and 3 above except for disclosing a device that detects the operation of the cylinder deactivated operation execution device (valve shutoff means).

The use of a valve position sensor is well known in the vehicle art. Sturman teaches of a control module for an intake and exhaust valves in an internal combustion engine. Sturman teaches of an intake valve position sensor (90) and an exhaust valve position sensor (62) that sends signals to microprocessor (226), which sends signals to the main engine controller (222), see at least Col. 7, lines 1-5 and Figure 7. The

Art Unit: 3618

microprocessor uses the signals and stored data to actuate a fuel injector (18) and the intake (20) and exhaust valves (22) for the internal combustion engine. It would have been obvious to one having ordinary skill in the art at the time the invention was made to include intake and exhaust valve position sensors as taught by Sturman into the invention taught by Masberg et al. One would be motivated to include intake and exhaust valve position sensors to provide feedback to the control device (31) taught by Masberg et al., providing feedback of the position of the valves to the control device would provide verification that the valves are fully shut during cylinder shut off.

In regards to claim 4, Masberg et al. teach that the throttle valve position is an operating parameter (Col. 8, lines 41-42), but is silent if the fuel supply is gradually increased by a predetermined amount depending on the throttle opening at the time fuel is restarted. It would have been obvious to one having ordinary skill in the art at the time the invention was made to gradually increase the amount of fuel to the cylinders when the shut off cylinders are restarted. One would be motivated to gradually increase the fuel supply to smoothly bring the shut off cylinders back to operating speed to reduce shocks in the vehicle during start up of the cylinders.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 5,975,052 issued to Moyer teaches of a fuel-efficient valve control device by disabling cylinders to allow other cylinders to operate at higher efficiencies.

U.S. Patent No. 5,725,064 issued to Ibaraki et al. teach of a hybrid vehicle where fuel to the internal combustion engine is cut off when the vehicle is in a stopped state.


U.S. Patent No. 4,414,936 issued to Huff teaches of an internal combustion engine with cylinder deactivation.

U.S. Patent No. 6,223,846 issued to Schechter and U.S. Patent No. 6,247,437 teach of other hybrid vehicles with variable valve timing.

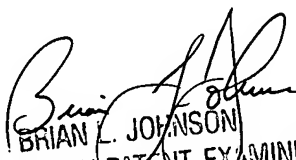
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Swenson whose telephone number is (703) 305-8163. The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Johnson can be reached on (703) 308-0885. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7687 for regular communications and (703) 305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.


bls
June 27, 2003

Brian Swenson
Examiner
Art Unit 3618


BRIAN L. JOHNSON
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600
6/30/03